

## NOTES ON NESTS OF SOME TRAPDOOR SPIDERS AND THE NEST OF *CALOMMATA TRANSVAALICUS* HWTT.

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THE following notes relate to the nests of the various trapdoor spiders, which are recorded or described by Mr. John Hewitt in the foregoing article. We started studying these creatures at the instance of Mr. Hewitt. At first we discovered their abodes by mere chance, but experience taught us more successful modes of search which we briefly describe by way of introduction so that other workers may receive the benefits of our experience.

The first nests discovered were those of *Stasimopus robertsi* at Rosslyn. A single specimen was turned out when a moletrap was being set, and in a subsequent special excursion a great many nests were discovered. All of them were located by looking for faintly marked rings in more or less sandy patches between tufts of grass. To show how circumscribed was our knowledge at that time, we may state that we found no other species although several were subsequently found to occur there. Then we found a few nests at the Zoutpan, twenty-six miles north-north-west from Pretoria, representing *Galeosoma pallidum* and *Idiops pretoriae*, besides a species of Lycosid. Having discovered the *Galeosoma* type of nest, thus enlarging our experience of spider architecture, we renewed our search in the immediate neighbourhood of Pretoria. Then a number of nests of the two species (*Stasimopus* and *Galeosoma*) were discovered at Mayville, and during several expeditions to that place, careful search disclosed the fact, that there were more species there, than these two, for we discovered the peculiar nest of *Pelmatorycter pretoriae*, with the first part of the tube driven just below the surface, and carrying a wafer\* lid, another *Pelmatorycter* (sp. *brevipalpis*) with its peculiar Y-shaped nest, and *Idiops gunningi*, with a short tube and thin cork lid. We subsequently extended these excursions to the whole of the flat areas in the neighbourhood of Pretoria, but beyond extending our knowledge of the nests of *Acanthodon transvaalensis* and the two species of *Idiops*, little new in method of search was adopted. So far we had searched for nests only by carefully scrutinizing the ground in open places. During an expedition to Roodeplaat, on the Pienaars River, we encountered considerable difficulty in finding nests, perhaps owing to recent heavy rains having obliterated all trace of them, and the spiders having apparently not troubled to come out in the meantime. For two days we searched without much success, only a few of the commoner species being found; but, quite accidentally,

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\* We are employing the terms used by Moggridge in his well-known work, etc.

a tuft of grass was kicked up disclosing some white webbing, on following which downwards, the type of *Calommata transvaalicus* was discovered. The idea then occurred to us, seeing there were so many old lids in certain places, that there must be living spiders there, and that by carefully digging away the surface soil with a spade, we might disclose hidden nests. This proved to be most successful, for in a few minutes we discovered a number of specimens, including the type of *Pelmatorycter brevivalpis*. In a subsequent use of the spade in the neighbourhood of Pretoria, at places where we had previously searched, we had varying success, and it became evident that this method was usefully applied only in places where we found old lids and no new ones; where we were successful, however, the results were usually very good, for we found males of *Stasimopus robertsi*, *Pelmatorycter pretoriae*, var. *rufescens*, and *P. brevivalpis* only by this method. While the use of the spade spoils the upper part of the nests, it still indicates what species may be looked for at those places, when weather conditions are more favourable.

During an expedition to Swaziland border a few nests were found by searching the bare ground and the higher banks on old disused roads between Middelburg, Carolina, Lake Chrissie and Lochiel. At Forbes Reef the greater part of our spare time for three days was spent in searching for trapdoor spiders in the usual way; but as no old lids were seen, the spade was not brought into use. Then on the fourth day a single *open* nest of a young *Pelmatorycter* was noticed under a stone, which had been turned over in a search for lower vertebrates. A careful scrutiny revealed the important fact that there were as many nests under the stone as it could very well accommodate, representing three species and genera. Subsequent search showed that nearly every rock or stone, which afforded shelter and did not harbour scorpions or centipedes, was the place to look for trapdoor spiders. The explanation of this seemed to be that the sloping ground and heavy rainfall, characteristic of the locality, militated against the existence of the spiders, which survived only where shelter was afforded. Upon our return to Pretoria, it was thought, that a careful examination of similarly sheltered situations might prove to be the abode of species other than those we had so far secured there. Accordingly we proceeded to the Magaliesburg and were fortunate enough to find several new species as we had anticipated. These were found not only in the soil under the rocks but also in the moss-covered banks.

At Komatipoort the patches of earth lodged between the roots of aloes, which grew here and there on flat rocks, were found to contain numerous nests of *Acanthodon* sp?. Some of these nests were effectively hidden by leaves having been attached to the lids. On the sides of the rocks some bare patches of earth were observed, which had probably been denuded of vegetation by the flooding of the adjacent river. Even here nests were discovered of *Pelmatorycter* sp?. It was thus seen, that one should search in all manner of unlikely looking places. Consequently we were led to search amongst heaps of dead leaves round the roots of large trees and were not surprised to find that these situations also harboured trapdoor spiders, for under the leaves and sometimes amongst them, the nests of several different species were discovered.

We also had some experience of the genus *Moggridgea*, which belongs to a family in which arboreal types abound : we found some of them in the ground, some in the crevices of rocks, and others in the bark of trees. It will thus be seen that there is hardly a single place where one or another species does not occur, and frequently three or four species representing different genera may be found side by side. One's eyesight must be good, and if search is to be made in that way alone, it is usually necessary to squat down on the ground and study it from close quarters. To the unpractised eye nothing unusual will be seen, but when the characters of the lids of the different species are known, their discovery becomes simpler. Even the most practised eye does not always "spot" the lid, and it frequently happens that in digging out a nest one brings to light a neighbouring abode with the lid so cleverly constructed and adjusted that detection was previously practically impossible. It is therefore advisable in looking for nests, to scrape the surface soil with a trowel, so as to disclose the webbing of the tube or the lid, and subsequent search can be made, when their presence is known, should one desire to study the complete nests. It is a common occurrence to find quite a cluster of nests together, usually a few adult females and the majority immature or juvenile specimens. This indicates that some localities are more suitable than others, a matter which must largely contribute to the welfare and the existence of the species concerned. It has been observed, that large bare or partly bare patches of ground are the common abode of a number of species, particularly when the soil is of a certain reddish clay. In such places heavy rains must frequently destroy quite a number, but it is remarkable how much inundation some species will survive. These bare patches are probably chosen because the food is there more accessible than in the grass. Stony ground in the open veld is not much favoured, and loose sandy soil still less so ; in the first places burrows are not easily made and in the second, the sand must interfere with the burrowing by constantly falling in.

The species are all more or less adaptive to the conditions of their environment, and we frequently find an individual species making a nest different from that of its kind ; but, as a rule, the species are remarkably constant in the making of certain types of nests. Some species have the habit of disguising the lid, for which purpose the spiders usually choose material found in the immediate surroundings. Sometimes a twig is stuck upright on the lid, but the commonest disguise is a bunch of short straws placed upright or across the lid. Some nests of *Galeosoma pilosum* have been found disguised with pebbles.

Very little has so far been noted on the food of these spiders ; elytra of insects are invariably found in old nests, but are so crushed up as to be unrecognizable. In the nests of *Stasimopus*, small ants were found from time to time, and in one case a large green mantis ; in a nest of a *Galeosoma pilosum*, a green caterpillar was found half consumed.

These spiders appear to have many enemies ; they were never found under rocks where there were traces of nocturnal mice ; nor were they found under rocks where scorpions or centipedes had taken up their abode. In the nests themselves the remains of spiders, and sometimes also their

enemies, are not uncommonly met with. Centipedes must rank amongst their enemies, for quite a number were found in the spiders' nests, and in two cases the centipede had got into the nest of a *Galeosoma* and apparently starved the spider, though it had not succeeded in dragging its victim out of the secure position into which it had wedged itself before its death. A large number of cocoons of fossorial wasps were found in the nests of various species, but we did not succeed in hatching any of them; a very fine specimen of *Pompilus* was taken from an empty nest of *Stasimopus robertsi*. On several occasions small ants were seen to be busy in trying to dig out small *Pelmatorycters* (cp. *brevipalpis*) which had young ones. *Idiops gunningi*, var. *elongatus* specimens were instantly attacked by swarms of large ants, when the nests were opened. Two specimens of a spider belonging to a totally different family, *Palpimanus* sp. ?, were taken from nests of *Galeosoma vandami* at Gravelotte, one from a nest of *G. pilosum* at Pretoria College and one from a nest of a young *Stasimopus robertsi* near Rosslyn; in one of the first two of these nests were the remains of the *Galeosoma*, and those from Rosslyn contained young of *Palpimanus* with the parents. Apparently this spider preys upon the trapdoor spiders, but definite evidence as to this is wanting. In many species the lower surface of the trapdoor presents distinct tooth or claw marks, and one might therefore expect these spiders to cling tightly to the lid at some time or other, yet not more than about 5 per cent. were found doing so in the case of *Stasimopus*, *Acanthodon*, *Idiops*, *Pelmatorycter*, and *Spiroctenus*. During daytime at any rate they normally reside in the lower parts of their retreats. On the other hand, *Moggridgea* makes an almost invariable practice of holding down the lid. *Galeosoma*, having the protection of a shield, never holds down the lid, but blocks up the passage with the shield.

#### Family ATYPIDAE.

##### *Calomnata transvaalicus* Hewitt.

*Localities*: Roodeplaat, Hatfield, and between Villieria and Derdepoort.

The three nests above referred to were all found shortly after heavy rains had somewhat spoilt them, the entrance being obliterated and closed. The first one was discovered accidentally by a tuft of grass having been kicked up, but in all subsequent cases the nest was situated on bare ground. In two more found at Mayville in the middle of June, the entrance was open without a sign of a lid. The top of the nest was raised slightly above the ground, and, from the inner rim, neatly rounded off, sloping gradually outwards and downwards to the level of the ground, all this outer surface covered with earth resembling the surroundings. The interior of the tube was lined with loose, highly adhesive, silky webbing, which could only be seen when the nest was viewed from above; and in the case of the two complete nests described above, upon closer examination this webbing was found all but to close up the tube at a distance of about half an inch from the mouth, by pinching inwards. The adhesiveness of the webbing probably affords a protection against the intrusion of enemies. The nests are comparatively very deep (about 9 or 10 inches), and vertical for the greater part of their depth.

## Family CTENIZIDAE.

*Acanthodon transvaalensis* (Hewitt).

*Localities* : Rietfontein (Pretoria), Mayville, Skinner's Court, near Lyttelton Junction, Rietfontein (20 miles north-west of Pretoria), Schoemansrust, Roodeplaat, and Zeekoegat. Also Middelburg, Pan Station, Wonderfontein Station, in Middelburg District, and Steynsdorp, Carolina District.

Nests of this species were found situated on bare ground, under tufts of grass, or even in banks of old roadsides. The lids are almost circular, smaller than those of *Stasimopus robertsi*, very thin, of the "wafer" type, broadly hinged at the back (disguised above to assimilate with the surroundings), and with 3-8 minute tooth or claw marks concentrated nearer the hinge than the centre; it usually lies slightly above the level of the surrounding surface of the ground. The tube below the lid is usually not quite vertical, but does not slant so conspicuously as in *Idiops pretoriae*, and is broader at the bottom. At Lyttelton Junction, in March, a female with young was taken in a nest of *Galeosoma pilosum*!

NOTE.—Five nests taken at Middelburg were situated on hard bare ground, the lids fitting neatly into the entrance and level with the ground. Another nest taken at Middelburg and the one taken near Pan Station differed only in being situated on ledges on the bank of old roads. All these nests, with the exception of that from Pan, were peculiar in slanting backward for an inch, then dropping vertically for two inches, and for the remaining two inches doubling back again and downwards to a point almost below the entrance, so that the tube described a curve with the points vertically opposite one another. The one from Pan was like typical ones from the neighbourhood of Pretoria.

The following measurements are from a typical nest found at Mayville:—

Depth of tube.....	125 mm.
Width at the entrance (inside edge at the rim).....	16 × 13 mm.
Width at the bottom of the tube.....	18 $\frac{1}{4}$ mm.
Breadth of lid.....	16·65 mm.
Length of lid (front to back).....	13·5 mm.
Thickness of lid.....	1 $\frac{3}{4}$ mm.
Breadth of hinge.....	16 mm.

*Acanthodon Monticola* Hewitt.

*Locality* : Little Wonderboom, Magaliesberg.

Nests of this species are numerous in moss-covered banks, under small stones on the Magaliesberg. The lids are covered with bits of moss and earth, so as exactly to assimilate with the surroundings; they are circular, fitting *into* the entrance, but very thin, and the edge slightly overlapping the rim of the tube; the tooth or claw marks are very minute, situated in the centre, where a slight bulge is produced. The nests are shallow as a rule, owing to the shallowness of the soil where they are situated, and

horizontal or slightly slanting downwards; they are of about even width throughout their length or very slightly broader at the back. The nests, from which the males were taken, were very narrow at the entrance, and much broader and flatter at the back.

The following are measurements of a typical nest of a female:—

Width at the entrance (inside edge).....	6 mm.
Width at the bottom of the tube.....	7 mm.
Breadth of lid.....	$6\frac{1}{4}$ mm.
Length of lid (front to back).....	$6\frac{1}{4}$ mm.
Thickness of lid.....	$\frac{1}{2}$ mm.
Breadth of hinge.....	4 mm.

*Acanthodon paucispinulosus* Hewitt.

*Locality*: Gravelotte.

Notes and measurements were not made at the time of discovery of this species; but the nests were very similar to those of *A. transvaalensis*.

*Acanthodon*, cp. *grandis* Hewitt.

*Localities*: Forbes Reef, Swaziland, and Lochiel, Carolina District.

The Forbes Reef specimens were taken from nests situated either in banks of red clay or under the shelter of rocks; some of those from the banks had an enormous number of young. They were cleverly disguised to assimilate with the red soil and sometimes with moss, according to where they were situated. The nests found under the rocks were smaller than those from the banks and the specimens seem to be adult; their nests were vertical, with the lids disguised to assimilate with the soft dry mixture of earth and old vegetable matter found under the rocks. Nests from Lochiel varied considerably; thus, one taken from the bank on the side of a road was very shallow, only about 2 inches deep and horizontal in position; whereas the others normally slanted downwards and were about 4 or 5 inches deep. In some cases the lid was hinged on the lower edge of the entrance, so that when opened it stood out like a platform below the entrance.

*Acanthodon*, cp. *oomi* Hewitt.

*Localities*: Lake Chrissie, Tevreden, and Oshoek, Carolina District.

Numerous nests were taken near Lake Chrissie, all of them situated on the upper face of the bank on an old road. Some of them contained young. The lids in every case were covered with bits of grass, the first part of the tube standing out from the bank, and the whole outward appearance reminding one very much of the nests of *Galeosoma pilosum* and *G. hirsutum*. The tube was never very deep, only about 3 inches.

*Acanthodon schreineri*, Purcell, var. *minor* Hewitt.

This new variety was first discovered amongst stones on a kopje at Roodeplaat, Pretoria District. The nests were distinct from any previously found in the district, being characterized by peculiar double lids. Part of the tube projected above the ground for about a quarter to half an inch;

the lid was more or less D-shaped externally, much larger than and overlapping the tube, the entrance to which was closed by a thin lid, for the greater part attached to the upper D-shaped lid. Upon gently lifting the external lid the true lid still remains covering the entrance. Thus it is easy to conceive of an enemy in trying to get into the nest by lifting the external lid, pushing its way between the two and thus by its own pressure still holding down the real lower lid. The lower lid is wafer-like and attached to the external lid on the hinder part in the middle only, up to about the centre, the front half and sides being thus free; the external lid is much thicker, as shown in the measurements. The rim of the tube is wider than the lower lid, which fits exactly into it; below the rim the entrance narrows slightly inwards to about the normal width not far from the entrance; thence the tube usually continues straight inwards for only about half an inch, then curving downwards more or less straight to the bottom. The nests were usually placed on the sides of small banks of earth, but sometimes also on level ground, always, however, in sheltered situations. When nests were situated in banks the tube, curved downwards a short way from the entrance, as described above, but those in level places only curved very slightly. A single male was taken from a shallow tube alongside of and attached to another separate, much deeper tube containing a female; this male had been dead for a day or two, but was still in good condition, only the abdominal part of its body being slightly shrivelled. Smaller nests of juvenile specimens sometimes had two distinct entrances with lids somewhat similar to some nests of *Homostola zebra*; but all the larger nests had only one. Other nests were taken at Waterkloof, apparently of the same species, though males were not secured. These nests were all situated on the top of small banks, most usually well concealed under overhanging tufts of grass or aloes. These all penetrated the earth horizontally for about half an inch to an inch, the outer part of the tube projecting well away from the bank, and in some cases even tending to hang downwards.

The following measurements are of the types of the male and female found at Roodeplaats:—

*Female.*

Depth of tube.....	98 mm.
Width at the entrance (inside edge of rim)	13 × 9 mm.
Normal width of tube 10 mm. from inside edge of rim.....	8 × 9 mm.
Width at the widest part of the tube near the bottom.....	12 mm.
Breadth of external lid.....	15 mm.
Length of external lid (front to back)....	10 mm.
Breadth of inner lid.....	12 <sup>3</sup> / <sub>4</sub> mm.
Length of inner lid (front to back).....	8 <sup>3</sup> / <sub>4</sub> mm.
Thickness of external lid.....	2 <sup>1</sup> / <sub>2</sub> mm.
Thickness of inner lid.....	<sup>3</sup> / <sub>4</sub> mm.
Breadth of external hinge.....	14 mm.
Width of attachment of inner to external lid.....	12 mm.

*Male.*

Depth of tube.....	45 mm.
Width at the entrance inside edge of rim	$8\frac{1}{2} \times 6$ mm.
Normal width of tube 8 mm. from inside edge of rim.....	$7 \times 4\frac{3}{4}$ .
Width at the widest part near the bottom	10 mm.
Breadth of external lid.....	9 mm.
Length of external lid (front to back)....	$6\frac{1}{2}$ mm.
Breadth of inner lid.....	$8\frac{1}{4}$ mm.
Length of inner lid (front to back).....	$5\frac{3}{4}$ mm.
Thickness of external lid.....	$1\frac{1}{4}$ mm.
Thickness of inner lid.....	$\frac{1}{2}$ mm.
Breadth of external hinge.....	8 mm.
Width of attachment of inner to external lid.....	$6\frac{1}{4}$ mm.

*Galeosoma robertsi* Hewitt.

*Localities*: Mayville, Wonderboompoort, New Muckleneuk, Pretoria College, Brooklyn, Garstfontein, Elandsfontein No. 35, Skinner's Court, Hatfield, Rietfontein, near Crocodile River Bridge, Bon Accord Station.

Nests of this species are always distinguishable from those of *G. pilosum*, side by side with which they are frequently found, by the lids being flattened and level with the ground, and never decorated with bits of grass. The tube at the entrance is of the same diameter as the shield of the spider, but soon widens out irregularly, sufficiently for the spider to turn. Sometimes the shield of the spider could be seen near the entrance, but more usually it could only be seen after the nest had been partly dug open; as the digging operations proceeded, the spider dropped lower down until tightly wedged in at the bottom of the nest. Measurements are given hereunder, by which it will best be seen how the tube widens out and contracts. Despite the protection which is presumably afforded by the shield, dead specimens were often discovered at the bottom of the nest and sometimes also their common enemies, live centipedes, which had probably encompassed their death. The widening of the tube is usually situated about half-way down, but varies considerably, being sometimes quite close to the top and in others near the bottom; usually the upper and the lower parts of the wider portion bulge outwards gradually and not in the form of a bulb. Nests were found containing crawling young in March and April.

The following measurements are taken from a typical nest from Mayville:—

Depth of tube.....	115 mm.
Width at the entrance (inside edge of rim)..	$10\frac{1}{4} \times 10$ mm.
Width at the widest part of tube.....	15 mm.
Width at the narrowest part of the tube (near the bottom).....	7 mm.
Breadth of the lid.....	11 mm.



Length of the lid (front to back).....	10 $\frac{1}{4}$ mm.
Thickness of the lid.....	1 mm.
Breadth of hinge.....	8 mm.

*Galeosoma pilosum* Hewitt.

*Locality*: Mayville, Wonderboompoort, Pretoria College, Koedoespoort, Garstfontein, and Lyttelton Junction.

Also

*Galeosoma hirsutum* Hewitt.

*Localities*: Roodeplaat, Zeekoegat, Witfontein (near Pretoria North), and Rosslyn.

Nests of these two species are identical, being readily distinguishable from those of *G. robertsi* by the entrance being raised well above the surrounding level of the ground, often as much as half an inch, and decorated with a mass of bits of grass, particularly on the lid, which is usually concave above and fits on to the rim of the entrance and not into it as in *Stasimopus*; this decoration is a remarkable disguise, for it gives to the projecting portion of the tube an exact resemblance to a worn-off tuft of dead grass. Some nests were found at Mayville, which were decorated with small pebbles instead of grass. Nests of members of this genus are usually found on level ground, where there are bare patches interspersed with grass tufts and small shrubs. At Mayville there are hundreds of nests scattered over a flat, in many places being situated only a yard or two from one another in great numbers. The two species, *robertsi* and *pilosum*, occur here side by side, though the latter seems to be the most plentiful. Nests of both species were found with young.

The following are measurements of a typical nest of—

*Galeosoma pilosum*, from Mayville:

Depth of tube.....	125 mm.
Width of entrance (inside edge of rim)...	11 $\times$ 10 $\frac{1}{4}$ mm.
Width at the widest part of tube.....	16 mm.
Width at the narrowest part of the tube (at the bottom).....	7 mm.
Breadth of lid.....	12 mm.
Length of lid (front to back).....	11 mm.
Thickness of lid, without straw.....	$\frac{3}{4}$ mm.
Breadth of hinge.....	8 $\frac{1}{4}$ mm.

*Galeosoma hirsutum*, from Roodeplaat:

Depth of tube.....	124 mm.
Width of entrance (inside edge of rim)...	9 $\times$ 7 $\frac{1}{4}$ mm.
Width at the widest part of tube.....	17 mm.
Width at the narrowest part of the tube (near the bottom).....	7 $\frac{1}{4}$ mm.
Breadth of lid.....	10 mm.
Length of lid (front to back).....	8 mm.
Thickness of lid, without straw.....	.65 mm.
Breadth of hinge.....	8 $\frac{1}{4}$ mm.

*Pelmatorycter nudus* Hewitt.

*Locality* : Little Wonderboom, Magaliesberg.

The male was discovered on the under surface of a stone which was turned over in a search for nests on the dry northern slopes of the Magaliesberg. No nests were found under this stone, but a female was discovered a few days later, not far off, under another stone; the nest of this female was situated in soft earth, mixed with pebbles; the lid was in the form of a hood, without a distinct hinge, being joined to the rim of the tube on all sides but the front, over which it folded down; the nest when open looked like a curved pipe, the opening facing parallel to the ground and the curve representing the top of the real tube. From the surface of the ground, the tube was vertical to the bottom of the nest; but an inch or so from the entrance a second tube branched upwards, but had no outlet, the top part being closed up. The nest was, roughly, Y-shaped. This is the common shape of nest of numerous specimens taken in all parts of the country, but which could not be identified owing to males not having been secured. The nests taken at Wonderboompoort did not differ materially from the above, but were situated in banks amongst rocks in the "poort" itself, where the ground was moister.

Measurements of nests taken in Wonderboom, 2nd March, 1916 :—

Depth of tube.....	120 mm.
Width at the entrance (inside edge of rim)	$6\frac{1}{4}$ mm.
Length of second tube.....	20 mm.
Distance of second tube from the entrance	23 mm.
Breadth of lid.....	$6\frac{1}{2}$ mm.
Length of lid (front to back).....	$8\frac{1}{4}$ mm.
Thickness of lid.....	$\frac{1}{2}$ mm.

*Pelmatorycter pretoriae* Hewitt.

*Localities* : Between Lyttelton Junction and Irene, Mayville, Pretoria North, Wonderboompoort, Skinner's Court, between Villieria and Derdepoort, Roodeplaat, Zeekoegat, and Schoemansrust, Pretoria District.

Nests of this species were always readily recognized by the peculiarity of the entrance. The lids are of the "wafer" type, flat and thin, placed level with the ground; the first part of the tube penetrates the ground obliquely just below the surface for nearly 3 inches, and then drops down vertically to a depth of about 12 to 15 inches. The hinge of the lid is broad, occupying about a fourth of the edge and almost straight, so that only the free edge is circular. Sometimes a short chamber with a lid was found at the side near the bottom of the nest, and when this was present, the spider was found to have taken refuge in it. The nests were found mostly in hard open ground; but some were found in the grass, and probably this is a common situation, but the nests are then not easily located.

The following are measurements of a typical nest taken near Lyttelton Junction :—

Depth of tube.....	315	mm.
Width at the entrance (inside edge of rim).	17·65	mm.
Length of upper, oblique, portion.....	70	mm.
Width at the narrowest part of tube.....	15	mm.
Width at the widest part of tube.....	20	mm.
Length of refuge chamber.....	28	mm.
Distance of refuge chamber from the bottom of tube.....	20	mm.
Breadth of external lid.....	18 $\frac{1}{2}$	mm.
Length of lid (front to back).....	15	mm.
Thickness of lid.....	$\frac{3}{4}$	mm.
Breadth of hinge.....	15	mm.

*Pelmatorycter pretoriae* var. *rufescens*, Hewitt.

*Locality* : Roodeplaat.

The nests of this species did not differ appreciably from those of *P. pretoriae*, but were not so deep nor so large.

The following are measurements of a typical nest from Roodeplaat :—

Depth of tube.....	210	mm.
Width at the entrance (inside edge of rim).	8	mm.
Length of upper, oblique, portion.....	51	mm.
Width at narrowest part of tube.....	6 $\frac{1}{2}$	mm.
Greatest width of tube (no blind passage).	11	mm.
Breadth of lid.....	8 $\frac{3}{4}$	mm.
Length of lid (front to back).....	10·65	mm.
Breadth of hinge.....	11	mm.
Thickness of lid.....	$\frac{1}{2}$	mm.

*Pelmatorycter brevivalpis* Hewitt.

*Locality* : Roodeplaat.

*Pelmatorycter*, cp. *brevivalpis*, Hewitt.

*Locality* : Wonderboompoort, Schoemansrust, Lyttelton Junction, Hatfield, and Koedoespoort, all in Pretoria District.

The nests from the locality where the type was taken had two distinct entrances, but subsequent observation showed that this was only a stage in the making of a new nest, one of the entrances being blocked up later. In the latter condition, the nests were somewhat like those of *P. nudus*, the entrance being covered by a hood and not a hinged lid. The lid is fixed on for about three-quarters of the circumference, the remaining quarter being free and folding over the lower lip. The hood protrudes in front, so that when folded down, the edges meet the lower anterior rim; there are minute tooth or claw marks scattered over the under-surface of the hood. Some nests were latterly discovered, which had a small side chamber, half an inch from the bottom and about half an inch deep, similar to those sometimes seen in the nests of *P. pretoriae*.

Numerous specimens temporarily assigned to this species were discovered wherever search was made, but males not having been found, they were not identified. Females with crawling young were frequently discovered, and as these appear to differ in different localities, there will probably prove to be a number of species; the nests of these unrecognizable forms were found in all manner of situations. It was frequently found that the hoods of nests situated in open ground had been drawn in and the entrance thus disfigured; in some cases ants were found trying to dig the spiders out, deep cone-like hollows having been excavated over the drawn-in tube, which when examined proved to contain females with young. It frequently happens that these delicate hooded entrances become spoilt by heavy rains when apparently the spiders may make a new entrance with a hood and leave the old entrance blocked up, thus leaving a blind passage, which is sometimes used as a place of refuge. Old nests may frequently be discovered by looking out for accumulations of the white webs of disused entrances, which show up conspicuously on hard ground, for by searching very carefully or by digging, one often finds either the new entrance or the tube to have been blocked up entirely and the spider still in occupation. It seems to be quite a common occurrence for most of the trapdoor spiders to remain closed in in the nests for considerable periods before they bestir themselves to open the nests again.

The following are measurements of a typical nest taken at Roodeplaat :

Depth of tube.....	143 mm.
Width at the entrance (inside edge of rim).	6 $\frac{1}{4}$ mm.
Length of upper, oblique, portion.....	28 mm.
Width at the narrowest part of tube....	5 mm.
Greatest width of tube.....	7 mm.
Distance of refuge chamber from bottom of tube.....	13 mm.
Breadth of lid.....	6 $\frac{1}{2}$ mm.
Length of lid (front to back).....	8.65 mm.
Thickness of lid.....	$\frac{1}{4}$ mm.

*Spiroctenus (Homostola) zebra* Pure.

*Localities* : Lake Chrissie, Lochiel, Steynsdorp, Oshoek, Tevreden, Elandspruit, Doornhoek, Carolina District; Forbes Reef, Swaziland; Bon Accord Station, Pretoria District.

Of the large number of nests discovered between Carolina and Swaziland, three sizes of females with young crawling over them were taken. The largest was found between Carolina and Lake Chrissie. No more specimens were discovered until Lochiel was reached and thence to Forbes and Swaziland only smaller sized specimens were taken; while some 2500 feet lower, on the banks of the Komati River, a single very small female with young was taken. This is interesting, as it appears to be the rule that specimens of birds and mammals are always larger in the higher altitudes than members of the same species from the hotter and lower levels. All the nests that contained young, and a few that contained none, had only one entrance; but the majority of nests without young

had two very distinct entrances that appeared to be made use of. The nests with the single entrance were exactly like those of *Pelmatorycter pretoriae*, but those with two entrances had the oblique upper portions, converging to the vertical tube from opposite directions, something like a letter T with the entrances above the ends of the cross-piece. By far the greater number were discovered under rocks, especially in the rainy region between and at Lochiel and Forbes Reef. In fact, at Forbes Reef, three species of trapdoor spiders, belonging to distinct genera, were very frequently found under the same rock, and we concluded that those found in unsheltered situations were mostly drowned by the heavy rains, while those under the stones and rocks survived. The first rock under which they were discovered was one that must have afforded the best of shelter, for the soft soil underneath was literally packed with the nests of three species; at the side of this rock, on either side of a small tuft of grass, a fine male and a fine female were taken from nests that had the lid covered with bits of straw; these were the only nests discovered which were so disguised. The male was greenish coloured and the female reddish, but both had the characteristic network of lines over the dorsal part of the abdomen.

*Stasimopus suffuscus* Hewitt.

*Locality*: Beerlaagte, Heidelberg District.

The nests of this species were exactly like those of *Stasimopus robertsi*, but somewhat larger; they were situated on hard ground at the back door of a farm house, and so cleverly hidden that the occupants of the house had never noticed them and were horrified when they saw these spiders taken out.

*Stasimopus robertsi* Hewitt.

*Localities*: All flat places in the neighbourhood of Pretoria.

Nests of members of this genus are always readily distinguishable by the tooth or claw marks on the lid, which form a distinct ring on the under surface, and by the comparative thickness of the lids, which fit very tightly into the entrance; they are found on hard, bare ground, as a rule, though sometimes also amongst grass or under the shelter of bushes; we have even found them under rocks on hill sides. The tubes descend without exception, vertically, to a varying depth, according to the nature of the soil in which they are situated, such as 8 inches in soft and only 4 inches in hard or stony ground. The top of the tube is broadened obliquely to accommodate the lid.

The following are measurements of a nest taken at Rosslyn:—

Depth of tube.....	145	mm.
Width at the top of the tube (inside edge)	25	mm.
Width at the narrowest part of the tube.	20	mm.
Width at the bottom of the tube.....	28	mm.
Breadth of lid.....	25 $\frac{1}{4}$	mm.
Length of lid (front to back).....	25 $\frac{1}{4}$	mm.
Thickness of lid.....	6	mm.
Breadth of hinge.....	11	mm.

*Idiops pretoriae* Poc.

*Localities*: Skinner's Court, Lyttelton Junction, Saltpan, and City of Pretoria.

This species is by no means common, only a single specimen being found here and there; but this may be due to their nests being situated amongst grass, under the tufts of which our few specimens were quite accidentally discovered, or sometimes the lid is disclosed by heavy rains which wash away the grass formerly hiding the nests. The lids most usually have pieces of straw attached to and covering them and also sometimes the rim of the tube; but in some cases the straw on the lids appeared to have been washed off though attached to the rim of the tube. On the under side of the lid there are minute tooth or claw marks, usually in the middle, but nearer to the hinge than the front. The hinge is very broad, almost equal to the breadth of the lid, which is D-shaped when seen from above. The tube is short, slanting downwards for the greater part, but at the bottom almost horizontal and much wider. This spider is more pugnacious than others, furiously attacking, by short rushes, when disturbed with a stick of some such object being thrust near to it. It has been observed that these spiders are seldom found in close proximity to others. They are reddish coloured and the majority are found in reddish soil; whereas *I. gunningi* is blackish coloured and is most usually found in blackish soil; but either species may, however, be found in opposite coloured soil.

The following are measurements of a typical nest taken at Skinner's Court:—

Depth of tube.....	134 mm.
Width inside at the top of the tube.....	23 × 21 mm.
Width at the bottom of the tube.....	27½ mm.
Breadth of lid.....	23½ mm.
Length of lid (front to back).....	21¼ mm.
Thickness of lid (without straw).....	4¾ mm.
Breadth of hinge.....	20 mm.

*Idiops gunningi* Hewitt.

*Localities*: Moselekatsnek, near Zwartspruit, Zwartspruit, and Lyttelton Junction.

Nests of this species were not distinguishable from those of *Idiops pretoriae*, except by their size.

The following are measurements of a nest taken at Moselekatsnek:—

Depth of tube.....	160 mm.
Width inside at the top of the tube.....	38 × 35 mm.
Width at the bottom of the tube.....	44 mm.
Breadth of lid.....	38¾ mm.
Length of lid (front to back).....	35¾ mm.
Thickness of lid (without straw).....	4½ mm.
Breadth of hinge.....	27 mm.

*Idiops gunningi* var. *elongatus* Hewitt.

*Locality*: Moorddrift, Waterberg District.

All the nests were found on hard ground amongst thorn scrub; they were about 6 inches deep, not quite perpendicular, and wider at the bottom than the top; the lids were level with the ground, but the edges fitted into the top of the tube, which widened to accommodate them. The lid was D-shaped when seen from above, as in other members of the genus, and showed on the under surface a circular patch corresponding with the lumen of the tube.

The following are measurements taken from a typical nest:—

Depth of tube.....	155 mm.
Width inside at the top of the tube.....	25 × 23 mm.
Width at the bottom of the tube.....	28 $\frac{3}{4}$ mm.
Breadth of lid.....	25 $\frac{3}{4}$ mm.
Length of lid (front to back).....	23 $\frac{1}{2}$ mm.
Thickness of lid.....	4 mm.
Breadth of hinge.....	22 mm.

## Family MIGIDAE.

*Moggridgea paucispina* Hewitt.

*Locality*: Wonderboompoort.

The nests of this species were found in crevices of rocks at Wonderboompoort; they were always short, rather flattened and pouch-like, about an inch and a quarter in length. The spiders themselves were always found clinging very tightly to the lids when attempts were made to open them, consequently claw or fang marks are conspicuous, but close together, and not as in *Stasiopus*, in the form of a ring. An empty nest was found in a small tree amongst the rocks at the same place, and another containing a female was found in the ground on the Pyramids Range.

A male and a female, besides some juvenile specimens, were subsequently taken in March, 1916, at Wonderboompoort, all from rocks.

The following measurements were taken of a nest at Wonderboompoort:—

*Male.*

Depth of tube.....	32 mm.
Width of the entrance (inside edge of rim)	13 $\frac{1}{4}$ × 9 $\frac{1}{4}$ mm.
Width of the widest part of the pouch..	17 mm.
Breadth of lid.....	13 $\frac{3}{4}$ mm.
Length of lid (front to back).....	9 $\frac{3}{4}$ mm.
Thickness of lid.....	1 $\frac{1}{4}$ mm.
Breadth of hinge.....	9 mm.

*Moggridgea microps* Hewitt.

*Locality*: Malelane, Barberton District.

This species was found in trees in a wooded ravine at Malelane, and appeared to be fairly common, judging by the number of old nests that were seen. Sometimes a hollow in the bark had been chosen for the nest and

cleverly covered with bark so that it was extremely difficult to find. Sometimes, when the crack or hollow was deep enough, the nest had been neatly levelled with the surrounding bark; but in the majority of those discovered was slightly raised and resembled a natural bulge or knot in the bark. Internally the nests did not differ appreciably from those taken in the rocks at Wonderboom (*M. paucispina*).

The following are measurements of the nest from which the type was taken :—

Depth of tube.....	34 mm.
Width of entrance (inside edge of rim)...	14 × 12 mm.
Width of the widest part of the pouch...	16 mm.
Breadth of lid.....	14 $\frac{1}{4}$ mm.
Length of lid (front to back).....	13 $\frac{3}{4}$ mm.
Thickness of lid.....	1 $\frac{1}{4}$ mm.
Breadth of hinge.....	11 mm.